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***Aerospace Medicine***

***IONIZING RADIATION  
PROTECTION PROGRAM***

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This instruction implements AFRPD 48-1, *Aerospace Medicine Program*, AFI 40-201, *Managing Radioactive Materials in the U.S. Air Force*, and AFI 48-148, *Ionizing Radiation Protection*. It establishes procedures and assigns responsibilities for implementing the ionizing radiation protection program at Joint Base Charleston. It applies to all military, civilian, contractor, and personnel supported by Joint Base Charleston who use radioactive materials or devices that generate radiation on Joint Base Charleston, except for personnel assigned to the Naval Health Clinic Charleston (NHCC), Nuclear Power Training Unit (NPTU), and the Navy Nuclear Power Training Command (NNPTC) schoolhouse. NHCC, NPTU, and NNPTC manage their own radiation programs and are governed by Navy regulations. This instruction does not supersede or replace the Joint Base Medical Memorandum of Agreement (JB MOA). Per the JB Medical MOA, 628 Medical Group (MDG) and NHCC will maintain responsibility for providing ionizing and non-ionizing radiation hazard assessments for their respective Active Duty (AD) and civilian populations. Each component will provide situational awareness to the other when any component's activities may impact the health and safety of the others' personnel. This instruction implements the "As Low As Reasonably Achievable" (ALARA) concept for control of ionizing radiation. It specifies local management procedures that are required in order for radiation exposures to be kept at a minimum, and to prevent loss of control of radioactive material (RAM).

Workplace supervisors will ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, Management of Records, and disposed of in accordance with (IAW) Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at

[https://www.my.af.mil/afirms/afirms/afirms/rds/rds\\_series.cfm](https://www.my.af.mil/afirms/afirms/afirms/rds/rds_series.cfm). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, Recommendation for Change of Publication; route AF Form 847s from the field through the appropriate functional chain of command.

## ***SUMMARY OF CHANGES***

This instruction reflects the new Joint Base Charleston posture and clarifies supported units and supporting units' responsibilities. A glossary of references, terms and supporting information has also been added; see Attachment 1, for user convenience.

### **1. Responsibilities.**

#### **1.1. Installation Commander:**

- 1.1.1. Appoint, in writing, a qualified individual to be the Installation Radiation Safety Officer (Installation RSO), as appropriate.
- 1.1.2. Ensure that personnel in his or her command comply with applicable radiation protection standards.
- 1.1.3. Support the ALARA concept and ensure subordinate units follow the direction of this instruction and the Installation RSO.

#### **1.2. Installation Radiation Safety Officer (Installation RSO):**

- 1.2.1. Administers the Installation Radiation Safety Program by compiling annual RAM inventories, assisting units with conducting ALARA training, monitoring exposures to ionizing radiation, and overseeing acquisition and use of RAM.
- 1.2.2. Conducts annual surveillance IAW applicable radiation regulations in all areas on Joint Base Charleston where RAM or radiation producing devices are stored or used.
- 1.2.3. Conducts radioactive leak tests of Generally Licensed items and other items requiring such tests, submit to lab for analysis, and supply the equipment owner with the results.
- 1.2.4. Identifies units requiring ALARA training and assist such units with a training program.
- 1.2.5. Ensures Permit RSOs receive appropriate Air Force Radioisotope Committee (AF RIC) training/certification.
- 1.2.6. Manages installation Thermoluminescent Dosimeter (TLD) Program.
- 1.2.7. Serves as AF RIC and Nuclear Regulatory Commission (NRC) inspectors' point of contact.
- 1.2.8. Provides consultation and advice on health hazards associated with radiation and the effectiveness of control measures.
- 1.2.9. Annually briefs the installation Environmental Safety and Occupational Health Council (ESOHC) on radiation protection topics, including receipt of new material and status of base permits, as well as status of radiation protection programs for commanders with radioactive material.

1.2.10. Reviews construction projects and facility designs to ensure radiation safety, and establishes procedures to review and approve contractor use of RAM (such as permitted density instruments) prior to use on Joint Base Charleston.

1.2.11. Informs the responsible commander and supervisors when processes and/or procedures are not in compliance and recommends corrective action to maximize safety and compliance.

1.2.12. Assists units' compliance with applicable posting and notification requirements.

1.2.13. Investigates abnormal incidents or exposures involving RAM.

1.2.14. Assists units with development/updates of their respective OIs/TOs as requested.

1.3. Unit Radiation Safety Officer (Unit RSO):

1.3.1. Provide initial and annual unit radiation safety training for all personnel in the unit and consult the Installation RSO for training assistance.

1.3.2. Ensure all individuals on the Air Force personnel Dosimetry program receive and follow written guidelines on wear and storage of radiation dosimeters and maintain records documenting all radiation safety training received.

1.3.3. Assist the Installation RSO by gathering information for annual inventories of ionizing radiation sources (RAM and x-ray units).

1.3.4. Notify the Installation RSO when new emitters are expected/received and if an individual is potentially overexposed to radiation.

1.3.5. Contact the Installation RSO immediately when any radioactive item is lost, damaged or leaking.

1.3.6. Ensure unit specific operating instructions and regulations are current.

1.3.7. Ensure compliance with applicable posting and notification requirements.

1.3.8. Ensure a replacement Unit RSO is identified and designated in writing by the unit commander before departing for PCS, extended TDY (180 days or more) or separation.

1.4. Permit Radiation Safety Officer (Permit RSO):

1.4.1. Advise the Installation RSO of the proposed uses of radioactive material or radiation-producing devices by individuals within the organization and advise the Installation RSO of any matters affecting the radiation safety program of the organization.

1.4.2. Coordinate radiation survey or hazard evaluation activities with the Installation RSO.

1.4.3. Assure the timely reporting of accidents or incidents involving radioactive material or radiation-producing devices to the Installation RSO, organizational commanders and according to AFI 91-204.

1.4.4. Assist in the investigation of incidents or accidents relating to the use of radioactive material or radiation-producing devices.

1.4.5. Ensure that radiation areas and locations where radioactive material are stored and used are properly posted.

1.4.6. Perform or arrange with the Installation RSO radiation safety training of newly assigned employees, students or workers who may be occupationally exposed to ionizing radiation and likely to receive greater than 100 mrem in a year.

1.4.7. Coordinate with the Installation RSO before initiating any project including procurement, use, storage and or disposal of radioactive material or devices or any changes in working conditions or activities which could affect the radiation safety program. All coordination shall be accomplished prior to initiation of the project.

1.4.8. Submit to the Installation RSO for review any new or revised operating instructions, standard operating procedures or unit instructions impacting on the radiation safety program prior to implementation.

1.4.9. Ensure that all users are familiar with radiation safety operating instructions and radiation safety procedures and the Joint Base Charleston ALARA program.

1.4.10. Ensure that radiation personnel monitoring devices, when required, are issued and worn correctly by all users.

1.4.11. Advise the Installation RSO, in writing, of any proposed changes to the radioactive material inventory, any proposed acquisition of new radiation-producing devices or any proposed generation of radioactive waste. Such notice shall be submitted with sufficient lead time to permit adequate review and comment.

1.4.12. Issue orders, as appropriate, to cease and desist any permit activity if unsafe practices are being used, gross negligence is observed or a failure to follow established procedures, policies or regulations is identified.

#### 1.5. Unit Commanders with AF-licensed RAM:

1.5.1. Appoint a Permit RSO in writing. A signed "USAF Request for Template Permit Action" form will satisfy this requirement.

1.5.2. Appoint a Unit RSO in writing. If no Unit RSO is appointed in writing, Unit RSO duties will default to the Unit Safety Officer until written authorization is developed.

1.5.3. Ensure personnel in his or her command who receive, distribute, use or dispose of RAM or work with radiation producing equipment comply with applicable protection standards to include annual ALARA training.

1.5.4. Request a RAM permit through the Installation RSO when the use of permitted RAM is necessary.

1.5.5. Coordinate with the Installation RSO when procuring, transporting and/or disposing RAM within the unit.

1.5.6. Contact the Installation RSO if any questions or problems arise (lost, damaged or leaking sources) concerning the permitted/licensed RAM.

1.5.7. Coordinate all shipment, receipts, and transfers of RAM with the Installation RSO.

1.5.8. Maintain a binder of correspondence and documents concerning the permitted RAM devices to include RAM Permit, Installation RSO appointment letter, current inventory, swipe sample results (if applicable) and miscellaneous correspondence.

1.5.9. Ensure radiation workers (except contractor personnel) who believe they may be pregnant report as soon as possible to their respective Medical Treatment Facility (628 MDG and NHCC).

1.6. Unit Commanders with General Licensed devices and x-ray producing equipment:

1.6.1. Appoint a Unit RSO in writing. If no Unit RSO is appointed in writing, Unit RSO duties will default to the Unit Safety Officer until written authorization is developed.

1.6.2. Ensure personnel in his or her command who receive, distribute, use, or dispose of RAM or work with radiation producing equipment (i.e. x-ray machines) comply with applicable protection standards to include annual ALARA training.

1.6.3. Coordinate with the Installation RSO when procuring, transporting and/or disposing RAM or x-ray devices within the unit.

1.6.4. Ensure radiation workers who believe they may be pregnant report to their respective Medical Treatment Facility (628 MDG and NHCC).

1.7. Contracting Squadron Commander:

1.7.1. Ensure contractors are informed of the requirement for local approval for the use of RAM on Joint Base Charleston.

1.7.2. Ensure notification requirements to the Installation RSO are included in local contracts awarded/issued if contractor use of RAM is required.

1.7.3. Ensure contractors using RAM have received approval from the Installation RSO to use the material on base and maintain that approval for entry onto the installation.

1.7.4. Give the Installation RSO the authority to conduct periodic checks of contractors using RAM on base.

1.7.5. Work with the Installation RSO to suspend contractor operations involving RAM believed to be unsafe.

1.7.6. Notify the Installation RSO when a contractor wishes to bring RAM on base.

## 2. Radioactive Material Procedures.

2.1. Requisition of Radioisotopes. An AF Radioactive Material Permit/General License is required by all AF units for the possession and use of special purpose, non-stock-listed and/or high intensity radioactive items. Delivery of such items cannot be accepted until a permit is issued by the RIC. The proposed using organization will contact the Installation RSO who will assist in preparation of the permit application IAW AFI 40-201, *Managing Radioactive Material in the US Air Force*. The Installation RSO will act as the liaison between the proposed user and the RIC.

2.2. Reporting/Certification:

2.2.1. A condition for continuance or issuance of a RAM permit is that the permittee comply with all requirements contained in the RAM permit.

2.2.2. Any incident involving RAM other than those in nuclear weapons or nuclear weapons components will immediately be reported to the Command Post and Installation RSO. The Installation RSO will make any further required reporting as necessary. If there is any uncertainty about reporting the incident, it should be reported.

2.3. Shipping:

2.3.1. The organization shipping RAM shall contact Aerial Port Squadron (APS) and the Installation RSO for recommendations on packaging, labeling, and other shipping requirements.

2.3.2. APS will notify the Installation RSO of all RAM shipments originating from Joint Base Charleston.

2.3.3. APS personnel will work with the Installation RSO to ensure the RAM packages are checked for leakage, proper shipment labeling, and shipping container adequacy prior to shipment.

2.4. Receiving:

2.4.1. When Special Handling receives an item containing RAM, they will immediately contact the Installation RSO to monitor the package.

2.4.2. Properly packaged and labeled RAM, once surveyed, will be forwarded immediately to the using organization or storage area.

2.4.3. Unauthorized purchases or shipments of RAM by base organizations are prohibited.

2.5. Storage:

2.5.1. Special Handling will have areas identified for the storage of RAM.

2.6. Contractor Use of Radioactive Materials on Joint Base Charleston:

2.6.1. Non-Air Force organizations, that bring RAM or conduct operations involving RAM on Joint Base Charleston, require written approval from the installation commander or Installation RSO.

2.6.2. Contractors or other non-Air Force organizations who wish to use RAM containing items on base must submit the following information to the Installation RSO for review and approval at least 30 days prior to use on Joint Base Charleston.

2.6.3. The location of item use.

2.6.4. Device information to include the manufacturer, model number, serial number, isotope, and isotope activity.

2.6.5. Copy of the Radioactive Material License, if applicable.

2.6.6. Date range of the request to bring the device onto the installation. Any extensions of the time frame must be reapproved by the Installation RSO.

2.6.7. The name(s) of the individual(s) using the device and his/her device training documentation.

2.6.8. The most recent leak testing documentation of the device, if applicable.

2.6.9. Storage plan for the device when not in use.

2.6.10. Local responsible representative and RSO contact information.

2.6.11. The contract number for which the project is supporting.

2.7. Radioactive Material Disposition Procedures:

2.7.1. Transfer or disposal of radioactive items through the Defense Reutilization and Marketing Office (DRMO) is prohibited.

2.7.2. Unit RSOs will contact the Installation RSO if the respective unit has unwanted RAM. The Installation RSO will make the determination as to whether unwanted RAM is classified as being recyclable or waste.

2.8. Requests.

2.8.1. Units that have items containing RAM isotopes (Ni-63 for example) that can be recycled shall submit a request to the Installation RSO who will then submit a formal request to have that item shipped to Wright-Patterson AFB and await recycling instructions.

2.8.2. Units that have RAM that is classified as waste will keep the item until disposal instructions are received from the Installation RSO.

2.8.3. Once the disposal instructions are received, the owning organization, Installation RSO, Supply, and Transportation will coordinate to ensure proper packaging, labeling, manifest preparation, distribution of forms and supply turn-in documentation is complete. The RAM owner is responsible for funding/constructing the shipment.

**3. Radiation Safety Training.**

3.1. Radiation safety (ALARA) training will be provided to the workplace supervisors by Bioenvironmental Engineering. The training will be given by the supervisor to workers prior to initial work with RAM or RAM emitters with refresher training given annually. The extent of training will be commensurate with potential radiological health hazards in the workplace. The Installation RSO will make the determination of which workplaces require ALARA training.

3.2. Ionizing Radiation Safety Training will include:

3.2.1. ALARA philosophy and practices.

3.2.2. The required protective measures and maximum permissible dose limits.

3.2.3. Health risks for females and fetuses that are occupationally exposed to radiation.

3.2.4. A description of the ionizing radiation source, potential hazards, personal protective equipment, and required administrative and engineering controls.

3.2.5. Documentation on the AF Form 55 or equivalent forms.

3.2.6. Signs and symptoms of overexposures.

3.2.7. Who to contact in case of known or suspected exposures.

**4. Procedures for Using X-Ray Equipment.**

- 4.1. Sections using x-ray equipment will notify the Installation RSO when new equipment is acquired or installed or when facility modifications are to be accomplished.
- 4.2. The Installation RSO will conduct annual radiation safety surveys where x-ray equipment is used.
- 4.3. Shop supervisors or Unit RSOs will ensure personnel receive annual ionizing radiation safety training. The Installation RSO will assist with developing and conducting this training.
- 4.4. Shop supervisor/workers will immediately report to the Installation RSO all suspected overexposures.
- 4.5. Supervisor and radiation workers will assist the Installation RSO with investigations of abnormal exposures and incidents.

**5. Thermoluminescent Dosimeter (TLD) Program.**

- 5.1. The AF TLD program will be managed by the Installation RSO.
- 5.2. The Installation RSO will determine which AF workplaces are required to be enrolled in the TLD Program.
- 5.3. The investigation action levels are 40 mrem/month and/or 125 mrem/quarter.

RICHARD D. MCCOMB, Colonel, USAF  
Commander



**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

Air Force Instructions (AFI):

AFI 40-201, *Managing Radioactive Material in the US Air Force*, 16 March 2011

AFI 48-148, *Ionizing Radiation Protection*, 21 September 2011

AFI 91-204, *Safety Investigations and Reports*, 24 September 2008

AFI 90-821, *Hazard Communication*, 30 March 2005

10 CFR 20, *Standards for Protection against Radiation*, Last Update: 23 December 2010

AFMAN 24-204\_IP, *Preparing Hazardous Materials for Military Air Shipments*, 1 September 2009

AFMAN 48-125, *Personnel Ionizing Radiation Dosimetry*, 4 October 2011

AFMAN 48-155, *Occupational and Environmental Health Exposure Controls*, 1 October 2008

***Prescribed Forms***

AF Form 673, Publication/Form Action Request

***Adopted Forms***

AF Form 1768, Staff Summary Sheet

***Abbreviations and Acronyms***

**AF**—Air Force

**AFPD**—Air Force Policy Directive

**AFI**—Air Force Instruction

**AFOSH**—Air Force Occupational Safety and Health

**ALARA**—As Low As Reasonably Achievable

**CAFB**—Charleston Air Force Base

**CFR**—Code of Federal Regulations

**DRMO**—Defense Reutilization and Marketing Office

**IAW**—In Accordance With

**JB CHS WS**—Joint Base Charleston Weapons Station

**NHCC**—Navy Health Clinic Charleston

**NNPTC**—Navy Nuclear Power Training Command

**NPTU**—Nuclear Power Training Unit

**NRC**—Nuclear Regulatory Commission

**RAM**—Radioactive Material

**REM**—Roentgen Equivalent Man

**RIC**—Radioisotope Committee

**RSO**—Radiation Safety Officer

**TLD**—Thermoluminescent Dosimeter

**TO**—Technical Order